

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

PICART et al.

Atty. Ref.: 3608-8; Confirmation No. 3195

Appl. No. 10/580,544

TC/A.U. 1715

Filed: May 26, 2006

Examiner: Sellman

For: METHOD FOR PREPARING CROSSLINKED POLYELECTROLYTE MULTILAYER FILMS

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**DECLARATION UNDER 37 C.F.R. §1.132**

I, Catherine PICART, a citizen of France, hereby declare and state:

1. I have a diploma in Materials Science which was conferred upon me by the Polytechnic Institute of Grenoble in 1994 as well as a Master in Biomedical Engineering which was conferred upon me by the University Joseph Fourier of Grenoble.

2. I am presently employed by Grenoble Institute of Technology and have been employed by September 2008. I have a total of 12 years of work and research experience in the field of layer-by-layer films. I have worked on and developed the subject matter that is described in the above-identified patent application.

3. I have reviewed the above-identified patent application, including the claims. I am a co-inventor of the claims of the above-identified patent application

4. I have reviewed Qiu (U.S. Patent Application Publication No. 2003/0143335), and specifically Example K of the reference.

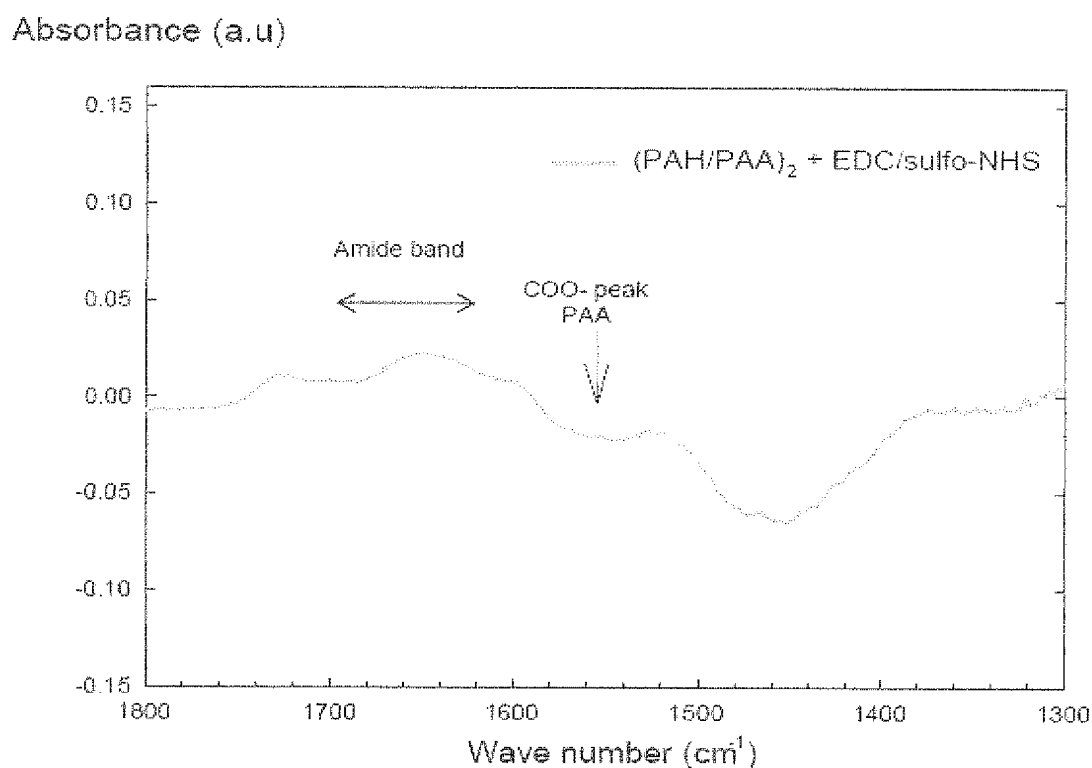
5. Qiu describes a method for modifying the surface of an article by depositing a polyelectrolytic tie layer onto the surface of said article. Example K of the cited reference describes the deposition of a polyelectrolytic layer onto the surface of contact lenses, the layer being obtained by reaction between polyacrylic acid (PAA) and polyalkylamine hydrochloride (PAH), with EDC and NHS. The method described in this example comprises the steps of successively dipping lenses into solutions of PAA and PAH, and then dipping the lenses in a solution comprising EDC and NHS.

6. The obtained polyelectrolytic film of the reference only contains one layer pair of cationic polyelectrolytes (PAH) and anionic polyelectrolytes (PAA). The reference fails to indicate whether the obtained polyelectrolytic film is crosslinked.

7. The following experiments, which were conducted by me and/or under my direction and control, demonstrate that the film according to example K of the reference is not crosslinked.

8. As a measurement of any cross-linking on the film of the reference, (PAH/PAA)<sub>2</sub> films were first deposited as described by the reference (films built in water with PAH at pH 7.5 and PAA at pH 3.5; see example K, ¶¶[0400] and description of polyelectrolyte solutions page 20, ¶¶[0352]-[0353]). These films were then contacted with the EDC and sulfo-NHS solution. Film growth and cross-linking was followed by Fourier transform spectroscopy (FTIR) in the attenuated total reflection (ATR) mode as described in the above-identified patent application.

9. The growth and cross-linking of the film described by the reference was evaluated and the following graph of figure 1 shows the difference between FTIR spectra obtained after contact of the film with the EDC/sulfo-NHS solution and before contact (Figure 1).



Specifically, Figure 1 is a spectra taken before and after cross-linking of the (PAH/PAA)<sub>2</sub> film according to example K of the reference.

10. For the (PAA/PAH)<sub>2</sub>, the decrease of the COO- peak of PAA is barely visible. Furthermore, the increase in the amide band is very minor. A quantitative analysis of

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the COO<sup>-</sup> peak of PAA (at 1566 cm<sup>-1</sup>) showed a decrease of COO<sup>-</sup> peak of PAA to be only of 6.5%. The (PAA/PAH)<sub>2</sub> film of the cited art exhibited only a very minor change in structure.

11. From the FTIR data, one of ordinary skill would conclude that the films of the reference have not been cross-linked.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Signed Picart  
Catherine PICART

Date le 05/04/2011  
(April 5<sup>th</sup> 2011)